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NOTICES FROM THE LICK OBSERVATORY.*

PREPARED BY MEMBERS OF THE STAFF.

COMET *c* 1903 (BORRELLY).

A telegram announcing the discovery of a new comet by M. BORRELLY, at Marseilles, on June 21, 1903, was received here on the evening of June 22d. Observations of it were secured by the writer the same night and the two following nights, and the resulting positions telegraphed to other observatories. The comet at the date of the first observation was in the position R. A. $21^h\ 52^m$; Decl. $-7°$, and was moving slowly westward and more rapidly northward. It appeared to be fully as bright as an eighth-magnitude star, and had a small disk-like nucleus estimated of about the tenth magnitude. A brushy tail could be traced for half a degree in the south preceding quadrant.

The comet's apparent motion has increased very rapidly, owing to its near approach to the Earth, with a corresponding increase in its brightness. On June 30th it was easily visible to the naked eye, and last night (July 14th) it was as bright as a third-magnitude star. Notes on the comet's orbit, and on the photographic and spectrographic observations secured here will be found on another page.

R. G. AITKEN.

July 15, 1903.

THE PHOTOGRAPHIC SPECTRUM OF COMET *c* 1903 (BORRELLY).

A photograph of the spectrum of this comet was obtained on July 15th, using the small slit-spectrograph attached to the Crossley reflector. An exposure of four hours showed the five bands which were photographed in comets *b* 1893 (RORDAME)† and *b* 1894 (GALE)‡, by CAMPBELL. The relative intensities of these bands are also the same, with one exception, allowing for the differences of dispersion and absorption of the instruments used. The band at λ 420 is quite conspicuous in both of the earlier comets, but is very weak in Comet Borrelly.

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* Lick Astronomical Department of the University of California.

† *Astronomy and Astrophysics*, Vol. XII, p. 652.

‡ *Astronomical Journal*, Vol. XIV, p. 111.

Very little continuous spectrum is shown in the photograph, although it seemed quite strong in the visual portion of the spectrum.

C. D. P.

July 19, 1903.

ELEMENTS OF COMET *c* 1903 (BORRELLY).

The following orbit was computed from observations made on June 22d, 30th, and July 10th, by Dr. AITKEN:—

$$T = 1903,\ \text{August}\ 27^{\text{d}}.6056,\ \text{Gr. M. T.}$$

$$\left.\begin{array}{rl} \omega = & 127^\circ\ 19'\ 25''.5 \\ \Omega = & 293\ \ 32\ \ 55.0 \\ i = & 84\ \ 59\ \ 45.3 \end{array}\right\} 1903.0$$

$$\log q = 9.518126$$

Residuals (O - C):—

$\Delta\lambda' \cos\beta'$ — $1''.0$

$\Delta\beta'$ $+5.7$

The orbit of this comet bears no close resemblance to any previously observed.

An extended ephemeris shows that the comet reaches a north declination of over 68° on July 20th. It then turns south, with diminished geocentric motion, and at the time of perihelion is still 15° north of the Sun on almost the same meridian. It will thus be visible as an early evening object until after its perihelion passage, after which it will become a morning object for a few days. As its southward motion is rapid, it will soon after be lost to northern observers.

Its theoretical brightness reached a maximum on July 17th, when it was fourteen times brighter than at discovery. At perihelion its theoretical brightness is 8. Its observed brightness will, in all probability, be greater than theory indicates.

July 19, 1903. C. D. P.

PRELIMINARY NOTE ON PHOTOGRAPHIC OBSERVATIONS OF COMET *c* 1903 (BORRELLY).

Photographic observations of Comet *c* 1903 (BORRELLY) were begun at the Lick Observatory on the night succeeding